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A Physical Medicine Program in the Treatment of Multiple Sclerosis

(Preliminary Report)*

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A review of the medical literature on multiple sclerosis impresses one with the many ideas and theories that the profession has utilized in the thus-far unsuccessful attempt to solve this pathological entity.

The literature on multiple sclerosis is a mirror of our ignorance. Brickner,¹ in 1936, summarized in tabular form some sixty separate agencies, or combinations of them, which were reported of value in treating this disease. These agents consisted of drugs, surgery, and physical measures. The application of a new treatment usually was precipitated by a new theory concerning the cause of the disease. Since Brickner published his paper the parade of new drugs has continued. Histamine, dicoumarol, prostigmine, and others have briefly occupied medical interest. Reports as to results have been vague and often contradictory. Confusion is undoubtedly increased by the nature of the disease. Remissions create the greatest difficulty in evaluation of the results of treatment.

The development of physical medicine drifted the attention to physical agents—ultra violet,² X-ray,³ diathermy,⁴ cabinet fever,⁵ and the latest, re-educational exercises.⁶ All, with the exception of exercise, have been discarded as of no lasting value.⁷

In the treatment of any disease for which we possess no specific cure we must give consideration not only to the disease manifestations but also to the patient and to ourselves. This is more necessary than in those entities for which we have an abrupt, specific curative mechanism. The aphorism promulgated by Hippocrates twenty-three centuries ago is still valid; "The art of medicine consists of three things—the disease, the

patient, and the physician".⁸ We weld these three things into one and we call it psychosomatic medicine. In our studies we found that psychological, social, and economic factors play an important part in results. We found quite consistently in our cases that there are daily oscillations—ups and downs—in the condition of the patient which are the result of outside influences. These factors are perhaps minute but they accumulate, and in the final analysis they may alter the course of the disease. Obviously we are not talking about deep behavior aberrations for which one must use scientifically administered psychotherapy but we do emphasize the existence of little things that are disturbing to the patient and easy to eliminate with a common sense approach to treatment. Consequently, we have trained all personnel of the rehabilitation team to be psychologically minded, explaining to them that we are treating the entire patient—not his muscles, nerves, or joints separately. Consequently, the contribution of every member of the team (be he the nurse, social worker, attendant, or the physician himself) is a part of the treatment. Just as one missing brick might result in collapse of the edifice in the erection of a building, so in treating the patient with multiple sclerosis one improperly applied procedure or badly used word or indifference might mean lessening of the value of all other efforts.

It might seem to you that we have wandered away from our topic. We do not think so because it happens so often that the best treatment or the best technique may be unsuccessful if the patient and professional (or sub-professional) relationship is not sound. After all, we are still not very far away from the dic-

tums of Hippocrates in treating this disease.

The role of prostigmine in relieving muscle spasm has been advocated for a number of years. Its use in neuro-muscular disabilities was first confined to myasthenia gravis on the basis of its pharmacological action, namely, inhibiting the enzyme, cholinesterase, at the myoneural junction and thereby facilitating transmission of the neural impulse. The use of this drug is logical, pharmacologically speaking, in this instance. However, ever since it was introduced in the management of "spastic" conditions the rationale under these circumstances is puzzling. The inhibitory action of prostigmine on muscle spasm might be explained⁹ on the basis of dosage (small doses would stimulate and large doses inhibit transmission at the myoneural junction) or perhaps by direct inhibitory action on the spinal cord synapsis.¹⁰

Activity is the basis of neuro-muscular function. In order to maintain power, endurance, and co-ordination of the neuro-muscular mechanism, continued activity is necessary.¹¹ The amount of activity is also important. Disuse or not enough use of a part will lead to muscular atrophy. Weakness on this basis may initiate a chain of symptoms which are quite apart from the primary disease process per se. This encourages us to believe that the generally accepted maximum of one-half hour of exercise per day in multiple sclerosis is inadequate to halt the process of secondary muscle atrophy. Therefore, we have kept our patients physically busy about eight hours a day with due consideration as to age and general physical condition of the patient. We adhere to this rule except in one type of multiple sclerosis, the so-called acute, fulminating, type, in which we feel that strain and exertion is contraindicated. In treating these patients, in addition to the symptoms occasioned by disuse-weakness, one must deal also with actual organic interruption of neuro-muscular pathways. When plaques have formed in the nervous system the damage is irreversible. In such an instance one could expect improvement in function only by the re-education of substitute motor pathways leading from undamaged areas of the central nervous system to the periphery. That this is possible has been shown experimentally by Fulton.¹²

Description of Therapeutic Procedures

The study was initiated in January, 1948, and it is still in progress. It is presented as a program from which there has been no deviation. The group consists of thirteen patients, all are males (two negroes), whose ages range from twenty-two to fifty-two years. In twelve cases the duration of the symptoms varied from twenty-five years (B.M.T. R-No. 66 264) to four years (B.K. R-No. 69 969). They may, therefore, be classified as chronic cases. One case, whose symptoms began two years ago, abruptly became very much worse during treatment.

After admission of the patient to the hospital the necessary physical examinations and laboratory studies are performed for the establishment and/or confirmation of the diagnosis of multiple sclerosis. The diagnosis is established to the satisfaction of the medical staff. Muscle tests and functional capacities to perform activities inherent in daily living are checked routinely and are used later for evaluation of progress. The patient is then transferred to the special chronic neurological rehabilitation unit and treatments are started.

The administration of prostigmine and exercises are begun simultaneously. The initial dosage of prostigmine is as follows:

Prostigmin methyl sulfate 1 cc (1:2000) by hypodermic injection. Atropine sulfate gr 1/150 also hypodermically 8:00 A.M. and 1:00 P.M.

Subsequently the dosage is increased or decreased according to the patient's tolerance. If the patient tolerates the initial dosage he is also given prostigmin bromide 15 mgm. orally, three times a day. He is kept in bed at least one-half hour after the administration of prostigmine. Following the rest period he begins the prescribed activities in Corrective Therapy, Physical Therapy, and Occupational Therapy.

We consider Occupational Therapy activities as a part of the patient's exercise program. Such activities are important not only for the building up of muscle power but also for improvement of co-ordination. By engaging patients in such simple activities as leather lacing, link belts, cord knotting, playing

checkers, and typewriting, co-ordination is facilitated in carrying out certain fundamental movements that are ultimately translated into self-care activities. They are also given bedside Occupational Therapy.

Patients are kept busy from 8:30 A.M. until 11:30 A.M. and from about 1:00 P.M. to 4:30 P.M. Saturdays, Sundays, and holidays, exercises are not given but patients are encouraged to be active according to specific instructions.

Exercises are carried out passively when voluntary control over the muscles is absent, when co-ordination is poor, and also when muscles are so weak that they are unable to move parts voluntarily. The employment of mass reflexes is of value in re-education of function in the corticospinal tracts. When muscular strength improves the exercises are performed actively with assistance and, later, without assistance. Resistance is applied manually and also using weights and apparatus at our disposal. In some cases selective electrical stimulation is also used to help patient in establishing muscle awareness and also re-establishing proper pattern of movements.

Results and Discussion

Because of the short observation period final evaluation and conclusions are, of course, out of the question. However, progress and results up to the present time may be summarized as follows:

Improvement is noted when treatments are first started. As a rule it consists of improved morale, better posture, and increased strength of muscles. We believe this improvement to be due to these factors: prostigmine, exercises, and psychological influence of a new treatment. Prostigmine does not relieve spasticity in every case. As a matter of fact, we have observed aggravation of this symptom by prostigmine. However, when this was the case, careful questioning often elicited emotional factors (such as worry over home situations) which might have contributed to the increase of spasticity. Those patients who have tolerated the drug well and who have received large amounts have shown greater relief from spasticity. R.S.T. received 8 cc by hypodermic injection daily and 45 mgm. orally from 2-9-48 until 4-22-48, during which period the severe spasticity was definitely de-

creased. On 4-22-48 signs of drug intoxication appeared and the dosage was reduced. Spasticity was again aggravated but did not return to the original level of severity. We do not know yet whether prostigmine has any value when spasticity is not present. At present we feel that prostigmine is helpful in relieving signs of spasticity, but that it probably has nothing to do with subsequent improvement. This will be verified by a control group which will receive saline hypodermic injections and placebo capsules carrying out the usual exercise program.

Exercise is of definite contribution in our treatments. There is no need for elaboration that exercise increases circulation and improves nutrition of tissues, thereby helping in recovery. Besides, patient has a feeling of accomplishment which no drug can simulate. Furthermore, with re-educational and co-ordination exercises we help these patients to perform simple tasks which they had forgotten during the course of their disability. For instance S.H. (R-No. 64 734) after about six months' "training" learned to open a package of cigarettes, take one out, and was able to put his shoes on.

The strain of exercises and maintained activity for several hours daily does not seem to have adverse effect on the patient except when the physical capacity is impaired due to some other underlying condition than multiple sclerosis.

Treatment does not prevent relapse. B.K. (R-No. 69 969) suffered one in July, 1948, which lasted until the middle of August, 1948. During relapse he developed a complete paralysis of the left lower extremity and considerable weakening of the upper extremity. Another patient (A.A. R-No. 72 939) who could walk fairly well when he was first examined (10-1-48) suffered such a severe relapse that twenty days later he became completely wheel chair ridden. This patient has been diagnosed as a fulminating, or so-called acute, type of multiple sclerosis.¹³ In this type of case we are in agreement with other observers that exercises should be reduced to the minimum—perhaps carry on with simple therapeutic exercises on the exercise table to prevent joint stiffness and contractures.

In the entire group one patient (W.L. R-No. 72 335) has experienced improvement of urinary incontinence. He can retain urine but urgency must be relieved quickly. Several of the patients obtained relief of their constipation. We believe that prostigmine is responsible for bladder and bowel improvement. This is verified by the fact that when the dosage of prostigmine was reduced symptoms reappeared but when the amount of prostigmine was again increased, patient experienced relief again.

Summary

1. A group of thirteen cases of multiple sclerosis have been studied.
2. Final conclusions have not been made pending evaluation of control groups and larger observations.
3. A carefully planned exercise program consisting of increasing amounts of physical exertion was employed.
4. All patients showed initial improvement except one who has a "fulminating" type of multiple sclerosis.
5. Prostigmine is valuable in relieving spasm, bladder and bowel symptoms, but we feel that it has no further value. The greatest benefit was noted in cases tolerating large doses of prostigmine.
6. True evaluation of prostigmine as an adjunct to an extensive exercise pro-

gram will be possible when control studies will have been completed.

We wish to express our sincere thanks to Mr. James Burrows, Executive Assistant, Physical Medicine Rehabilitation Service and to Mr. William Russell, Chief, Manual Arts Therapy for their skillful help and whole-hearted support in the preparation and organization of this study.

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Medical Rehabilitation Boards in N. P. Hospitals

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The outstanding work of a properly organized and administered Medical Rehabilitation Board in General Medical and Surgical and Tuberculosis Hospitals is generally known. This paper is designed to familiarize those interested in Medical Rehabilitation with the efforts and results of a Medical Rehabilitation Board in an N. P. Hospital.

Medical Rehabilitation Boards were established in Veterans Administration General Medical and Surgical and Tuberculosis Hospitals by Veterans

Administration Technical Bulletin 10A-13, dated December 26, 1946. In the Veterans Administration Branch Area No. 5, Branch Office Circular No. 47, dated October 22, 1946, provided for the establishment of Medical Rehabilitation Boards in N. P. Hospitals, as well as in other types of hospitals.

The Veterans Administration Hospital at Murfreesboro, Tennessee, is a 1,307 bed N. P. Hospital. The Physical Medicine Rehabilitation Service at the hospital consists of the usual five Units—

Physical Therapy, Occupational Therapy, Educational Therapy, Manual Arts Therapy, and Corrective Therapy. A very capable medical staff, five members of whom are diplomates in psychiatry, one in internal medicine and one in roentgenology, considers the Physical Medicine Rehabilitation Service as an important and integral part of the Medical Division and utilizes the Physical Medicine Rehabilitation Service facilities to a maximum degree. A fifty-four hour "Orientation to Psychiatry" course for all lay Physical Medicine Rehabilitation personnel, conducted periodically by members of the Medical Staff, has served to increase the personnel's comprehension of mental diseases and to increase the doctors' interest and confidence in the Physical Medicine Rehabilitation Service.

The objective of the Medical Rehabilitation Board, which is a service rendered by the Physical Medicine Rehabilitation Service in addition to the five Units mentioned above, is the maximum recovery, development and retraining of those patients referred to the Board. Referrals can be made either by the patient's ward physician or by any member of the Rehabilitation Board. The functions of the Board are to plan, initiate, and evaluate periodically a specific rehabilitation program for each hospitalized veteran referred to the Board; to guide and advise the patient, as soon as his mental condition is such that he can benefit from advisement; to assure that the maximum benefits of all services in the hospital are brought to bear upon the individual patient's case in achieving his rehabilitation; and to coordinate the hospital rehabilitation program with the services of the Vocational Rehabilitation and Educational Division of the Regional Office, so that the patients can receive all possible benefits from that service and begin post-hospital activities at the earliest possible time subsequent to discharge from the hospital. Patients are not usually referred to the Board until their mental condition is such that their discharge is contemplated by the ward physician within a period of ninety days.

The following staff members were designated to serve as members of the Board:

1. The Chief, Physical Medicine Rehabilitation Service—Chairman.
2. Ward Physician concerned.

3. Executive Assistant, Physical Medicine Rehabilitation.
4. Chief, Occupational Therapy.
5. Chief, Manual Arts Therapy.
6. Chief, Educational Therapy.
7. Chief, Social Service.
8. Chief, Clinical Psychology.
9. Vocational Advisor (Itinerant basis from Regional Office).
10. Training Officer (Itinerant basis from Regional Office).

Board procedures and activities of the various board members will be illustrated by taking an actual case:

Patient X was referred to the Medical Rehabilitation Board on February 4, 1948. His case was scheduled to be considered by the Board February 12, 1948, and all board members were so notified. (The board meets each Thursday morning at 9:30 A.M. in the hospital conference room, and two new cases are normally considered each week.)

The patient's ward physician made the following report with reference to the case. Patient X was born April 24, 1917, in Dekalb County, Tennessee. He was one of a family of nine children, and there was no history of mental illness in the family. The patient left school when in the seventh grade at the age of fifteen years to assist on the family farm. He remained on the farm until he entered the military service June 5, 1941. Most of his military service was as a Military Policeman in San Francisco, California. He was discharged from the military service in 1943. He was never court-martialed nor was he AWOL while in the military service.

Upon discharge from the service, he returned to Tennessee and secured employment in a parking lot in the city of Nashville. He left this placement to go to work for a packing company in New York City. After a few months in New York, he returned to Tennessee and was hospitalized in the Murfreesboro V. A. Hospital in April of 1945. He stated that he frequently "just blew up" and that people told him that he was trying to kill himself. He further stated that "something got on me, and I could not handle myself." He was given a trial visit from the Murfreesboro Hospital in July of 1945 but was returned to the hospital in December of that year. He was discharged from the hospital in June of 1946 and again secured employment

with a company in New York. While there, he had another episode, whereupon he was hospitalized for sixty days and upon his release returned to Dekalb County, Tennessee. The patient was again admitted to the Murfreesboro Hospital on December 8, 1947, by transfer from the Veterans Administration Hospital, Nashville, Tennessee, where he had been admitted on November 4, 1947.

As on the occasions of his past admissions, he was given the diagnosis of manic depressive reaction, depressed type. On admission to the Veterans Administration Hospital, Nashville, the patient was in a depressed stupor. He had been drinking and taking nembutal. He showed much weeping and emotional instability. The patient adjusted well in the hospital but at times was very tense. He had periods of sudden depression and weeping without due cause. Physical examination and neurological examination were both entirely negative.

At the time the patient was referred to the Medical Rehabilitation Board, the ward physician stated that his psychosis was in partial remission and that the patient desired assistance in vocational rehabilitation subsequent to his discharge from the hospital. The board procedures required that each member of the board see the patient, read his clinical record, and do the necessary preparatory work with the patient in advance of the date that his case was to be considered by the Board.

The representative of the Social Service Section made her report with reference to the patient's social history, giving family background, work history, educational background, finances, and summary of social factors which would affect his rehabilitation. The Psychological Service gave its report to the Board, based upon the following psychological techniques: (1) Wechsler-Bellevue Test; (2) Rorachach; (3) Drawing Projection Test; (4) Arithmetic and Similarities; and (5) Interview. Findings: (1) A person of dull normal intelligence; (2) A highly unstable individual capable of explosive and impulsive behavior, but not psychotic at the time seen. It was suggested that the patient could benefit from vocational training but that he was a poor prospect for academic training and that he would benefit from opportunities for socially accepted aggression.

The Vocational Advisor from the Regional Office made his report with reference to the case and suggested a placement in an on-the-job training situation with the vocational objective of automobile mechanic. The Board approved this vocational objective and arranged for the patient to be assigned to a Manual Arts Therapy Shop, where a number of automobile engines were available for training purposes and to the Educational Therapy Unit, where the patient would be able to study the theoretical aspects of automobile mechanics. The patient's progress in the Manual Arts Therapy and Educational Therapy Units was reported each month by the Chief of the respective Units. On June 3, 1948, the Itinerant Training Officer from the Regional Office reported that he had a placement for the patient in an on-the-job training situation as an automobile mechanic. The patient was discharged, maximum hospital benefit, on June 9, 1948. He made an excellent adjustment in his on-the-job training situation, which was in a small community. In late November, 1948, the Regional Office Training Specialist, who had checked the patient's progress with the training establishment each month, made a statement in his report as follows: "The undersigned is actually astonished at the excellent adjustment that this patient has made in his training program."

This patient, of course, is typical of the successful cases. As the following narrative and statistical data shows, some cases were not so successful. The following information is a narrative and statistical statement of the results of the board for the period of August 1, 1947, to August 1, 1948.

1. Number referred to Board.....89
2. Number discharged prior to Board hearing 6
3. Number for whom request was withdrawn prior to Board hearing 4
4. Number rejected as unsuitable for rehabilitation activities 5
5. Number accepted by Board and placed in PMR activities for duration of hospitalization (1—[2 + 3 + 4])74

DISPOSITION OF ACCEPTED CASES, 6 to 12		Percent of "5"
6. Number placed in institutional training under Public Law No. 346 or 16	16	22
7. Number placed in on-the-job training under Public Law No. 346 or 16	8	11
8. Number placed on jobs not under Public Law No. 346 or 16 ..	8	11
9. Number discharged prior to completion of Board's recommended program	6	8
10. Number placed on trial visit after PMR training but without specific job or training placement	14	19
11. Number accepted by Board and still hospitalized and on a PMR placement	18	24
12. Number discharged under other circumstances	5	7
PRESENT STATUS OF PATIENTS WHO LEFT HOSPITAL, 13 to 17		Percent of all Placements
13. Number who are still in job or training program outside the hospital	16	50
14. Number who returned to hospital after job or training placement	10	31
15. Number who discontinued training or jobs but did not return to hospital	6	19
16. Number who went on trial visit and returned within the year..	7	
17. Number remaining on trial visit	9	

Some of the above categories require a few words of definition or explanation as follows:

No. 2: Two factors were responsible for the discharge of certain patients between the time of their referral to the Board and the date these cases were scheduled to come before the Board. The first of these was insufficient coordination between the physician referring the case and the Rehabilitation Board. This has been largely corrected by the establishment of a Rehabilitation Ward, a few months ago, under the direct supervision of the Chief, Physical Medicine Rehabilitation, acting as the ward surgeon, since most of the Board referrals originate from this ward. The other factor is the limitation of the number of cases that can be considered by the Board, due to the absence of a full-time Vocational Advisor and a full-time Training Specialist.

As a result of this limitation, the schedule of the Board is practically always full for several weeks in advance and some patients have to be discharged prior to the date set for their Board hearing, either because it is forbidden to retain them in the hospital merely for rehabilitation purposes or because they tire of waiting and demand their discharge against medical advice.

No. 3: The reasons that requests were withdrawn prior to Board hearing were either that the referring physician changed his mind as to the advisability or necessity for rehabilitation or that the patient suffered an acute exacerbation of his mental symptoms which rendered him, for the time being, unrehabilitable.

No. 4: The Board rejected a few cases, either because they refused absolutely to cooperate with the Board or to accept the Board's services, or because the Board decided, after consideration of the case, that the patient in question either was not in need of any service that the Board had to offer or was too psychotic to benefit by such service at that time.

No. 9: The patients who were placed on a rehabilitation program and discharged prior to its completion were either competent patients who wearied in well-doing and demanded their discharge against medical advice, or patients who were discharged maximum hospital benefit by their ward physicians without prior consultation with the Board. The latter category has also been decreased by the establishment of the Rehabilitation Ward.

No. 10: This category contains veterans who were not entitled to the placement services of the Regional Office and for whom suitable jobs could not be located by the Medical Rehabilitation Board of the hospital, as well as some who were so entitled but were sent back to their old employment or to a new job, which, with the assistance of Social Service, could be secured by their families. The majority of these, as shown by Category No. 17, have remained out of the hospital until the present time.

No. 11: This group constitutes the Board cases who are still in the hospital and actively working on their Physical Medicine Rehabilitation program. The monthly review of these cases, together with the consideration of two new cases each week, occupies practically the entire morning of the weekly meetings of

the Board and constitutes the major part of the work of the Board, as such. Of the five units which compose the Physical Medicine Rehabilitation Service, the Educational Unit, with its 125 courses of all levels of education, and the Manual Arts Therapy Unit, which consists of Wood Shop, Sheet Metal Shop, Automotive Shop, Machine Shop, Shoe Repair Shop, Upholstery Shop, Print Shop, Bookbinding Shop, and Photographic Shop, are especially concerned with this group of patients.

No. 12: Patients discharged under "other circumstances" includes:

- (1) Patients whose records were forwarded to Regional Offices in other states.
- (2) Patients discharged to secure their own employment.
- (3) Patients referred to the State Vocational Rehabilitation Section for placement.
- (4) Patients discharged to become self-employed.
- (5) Patients transferred to another hospital.

No. 13: This represents the number of successful placements to date and is the most obvious yardstick by which the value of the work of a Rehabilitation Board would be measured, although it fails to take into account the benefit obtained by those patients who took partial training or changed their jobs but did not return to the hospital, as well as those who had Physical Medicine Rehabilitation training in the hospital and were then granted a trial visit, with more or less definite employment possibilities in prospect (No. 10). For example, we cite the case of one veteran, a schizophrenic, who completed all but two weeks of a nine months course in bookkeeping and accounting in a business college, with excellent grades, and then voluntarily returned to the hospital. It is anticipated that he will shortly return and finish his course. When one considers the character of the material with which this board is working, as shown in the following diagnostic table, we believe that it will be conceded that the time and effort spent by the Board has been worth while and that further expansion of the work of the Board, in order to enable it to handle the larger number of cases that are available, would be justified.

No. 14: This category represents, in

a sense, the failures of the Board. Each of these cases should be carefully reviewed, in an effort to discover why each one of these men failed to adjust to his new environment and to see which adverse factors are subject to correction in subsequent efforts with the individuals concerned. It is our intention to do this, insofar as time and other duties will permit, as it is only in this way that we can hope to improve the quality of the work done by the Board.

No. 15: It is more difficult to evaluate the work of the Board in these cases, since they are not available for study, and it is here that the work of a full-time Training Officer would be of value.

Nos. 16 and 17: The number of cases here is too small to draw any positive conclusion as to whether the Physical Medicine Rehabilitation training received by these patients while in the hospital had any material influence in enabling them to remain out of the hospital. This particular question invites further investigation. One of the patients who returned from trial visit was subsequently discharged maximum hospital benefit and is now in training. He, consequently, is counted under Item No. 6 as well as Item No. 10, accounting for the total cases disposed of being 75 instead of 74, as would be expected. Two patients left the hospital on trial visit, returned to the hospital and were again granted a trial visit during the year and, therefore, were counted under both Items 16 and 17.

Diagnostic Table

Diagnosis of the patients referred to the Board:

Mental deficiency	4
Psychoneurosis	14
Schizophrenia	40
Chronic alcoholism	16
Drug addiction	1
Manic-depressive reaction	5
Psychopathic personality	5
Acute situational maladjustment	1
Encephalitis, chronic	1
Frozen feet, residuals	1
Psychosis, unclassified	3
Epilepsy, idiopathic	2
Encephalopathy, traumatic	1

The total number of diagnosis is fifteen more than the number of cases referred to the Board, due to the fact that some patients were given two diagnoses.

Conclusions

1. That all post-hospital planning by any Medical Rehabilitation Board must be made **with** the patient involved and not just **for** the patient. Emphasis must be placed on recognition of the patient's desires and on a maximum utilization of his assets.

2. Generally speaking, due to the press of other duties, only two new cases can be considered by the Board each week. Therefore, considerable thought should be given to selecting the patients for the Board to assure that patients selected for the Board are desirous of the Board's assistance, need the Board's assistance, and can benefit by the assistance that the Board can render.

3. The greatest consideration that hinders the Board's operation is the lack of a person to serve as a full-time post-hospital placement representative in that

the Regional Office Training Officer is legally entitled to assist only those World War II patients having a service connected disability, whereas many of the patients hospitalized are World War I patients or World War II patients having non-service connected disabilities. It is believed that the need for a post-hospital placement representative in an NP hospital cannot be over-emphasized, since many patients presently hospitalized could, in all probability, make a satisfactory economic and social adjustment in the event they could be assisted in a suitable placement outside the hospital.

4. It is the opinion of the authors that a Medical Rehabilitation Board can render a real service in an N. P. Hospital.

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Orientation and Foot Travel at the Industrial Home for the Blind

HAROLD RICHTERMAN
Supervisor, Vocational Training Institute

The ability to travel alone in safety is one of the most important in the total rehabilitation of the blind. The restriction in getting about is perhaps the most serious direct effect of the handicap of being blind. The blind person cannot get about by himself nearly as much as the seeing person can and thus cannot change his surroundings and secure opportunities for observation and activity comparable to sighted people.

I believe that we will all agree that one of the most challenging problems in work for the blind is this inability of the blind man to travel, with ease, confidence and safety. The blind man may be willing, and well trained and could be a definite asset to his place of employment, but he is often prevented from doing a satisfactory job because of his lack of physical orientation. Usually one of the first questions asked by a prospective employer will be, "How will you travel to and from work?" If the answer is not that he can do so with ease, confidence

and safety, the job is probably lost, right then and there.

I think that many of you have seen blind men on a street walking along very slowly, feeling their every step and tapping a white wooden cane along in front of them. This slow, faltering, cautious individual is not a picture of helplessness, but a picture of courage. Just imagine yourself blindfolded on a city street with a wooden cane, and just imagine how much courage you would have to muster to walk up the street. However, there is the other type of blind man: the one who travels skillfully with ease, confidence and safety. The difference between these two men which can be measured by personality makeup, physical fitness and environmental conditions, can frequently be measured most of all by the amount of training in travel technique that one man has had and the other has not had.

In the rehabilitation program for the blind at the Brooklyn Industrial Home

for the Blind, the program of foot travel and orientation has a very prominent place. To attempt here to describe our system and methods in detail would arouse many false conceptions and might do more harm than good. Foot travel and orientation is not something that a prospective teacher can read about and then feel that he has a knowledge of the subject. It is something that must be seen, and then practiced by the prospective teacher. Yes, actually practiced blindfolded so that he will get some small idea of just what it means to travel without sight. However, there are a few facts that should be emphasized. There is nothing very mysterious or complicated about the system of foot travel as we teach it. It is a combination of hard cold logic and a few elementary physical principles based on observations, experimentations, discussions and practicability. It is not something that can be mastered in ten easy lessons; it is something that once shown and learned, must be practiced and practiced over and over again, until it can be done with a minimum of effort, nervous strain and direct thinking of every step that is being taken. Also, it is not something that is cold and stereotyped. Although we follow a series of lesson plans, we do not at any time attempt to follow them without deviating when the need arises. Our instruction is individualized and, because of this, we must of necessity change our method with the change in pupil. The only thing that these men have in common is that they cannot see. Right there, similarity ceases. Some of our men are old, some young, some newly blind, some blind for many years, et cetera, and because of this the technique must be constantly varied or modified. Actually, for each and every individual whom I personally have instructed, there have been certain modifications which had to be made; and in different terrains, the technique had to be modified to fit the situation. Adaptation and improvisation are as important here as they are in any other educational process.

In the following paragraphs, I will attempt to give you in outline form an idea of our program in foot travel and physical orientation. As I have previously stated, this outline will change continuously to conform to the type of individual that is undergoing the training.

We have four main considerations in teaching the blind to travel in safety which relate to the primary objectives in rehabilitation of helping the individual to achieve the greatest physical, mental, social, vocational and economic usefulness of which he is capable.

I. Physical Usefulness:

- A. The ability to travel counteracts poor posture and the other signs of degeneration in physical fitness. Sitting constantly may produce weakness in the feet and knees, and being continually in a slouched position may result in kyphosis or scoliosis. The sunken chest and dropped head commonly result from an excessive sitting existence.
- B. The training of good habits of physical activity results in sound physical development.
 1. Walking will help in strengthening of legs and arches and in maintaining a good posture: head up, chest out, chin in.
 2. Personal factors:
 - a. Using hands and arms to stress a point.
 - b. Looking attentive by proper use of head and eyes, keeping the eyes open.
 - c. Dressing with regard to style and color.
 - d. Keeping well groomed, clean shaven and neat.
 - e. Eliminating nail biting, finger fidgeting, etc.
 - f. Eliminating rubbing or poking the eyes continually, swaying from side to side, waving the hands in front of the eyes—habits which make a person look blind, and which we in the field of work for the blind refer to as "blindisms".

II. Mental Usefulness:

The development of concreteness as a foundation for thought is important to healthy psychological orientation:

- A. The ability to explore the environment by physical contact avoids the necessity of thinking abstractly without specific foundation for the thinking.

- B. Finding out and interpreting for oneself gives one control of the environment and oneself in relation to it—thus, in walking down a street, what one can hear or smell, one will recognize and will interpret and therefore will not be travelling in a vacuum.

III. Social Usefulness:

- A. Moral freedom and independence begin with physical freedom, or the ability to go where, when and with whom you wish—one's knowledge that, to a great extent, one is independent and not dependent on others makes for self confidence and affords a basis for effective social behavior.
- B. Knowing that you can go to work and support your family.

IV. Economic Usefulness:

- A. The ability to travel to and from work is generally a first prerequisite to successful employment.
- B. Working in the home is not often feasible or profitable; and the cost of hiring a guide to accompany one to and from work is generally prohibitive.

A conception of the environment he lives in must be gathered by the blind man through his remaining senses. Therefore, the cane does not supplant, but is used in connection with the remaining senses.

Auditory sense: The localization and interpretation of sounds constitute the most important means by which the blind are able to orientate in their environment. The sound of moving buses, trucks, shovelling, junkman's bells, and the sounds of countless commonplace activities provide the blind person with the cues to the make-up of the environment he moves in and his position within it.

Olfactory sense: The habit of identifying odors with their probable source is one which, if properly developed, can add considerable significance to the information concerning his environment which the blind person derives through his recollection of what he has learned about his environment through previous experience. It may interest, and perhaps amuse many of you to know that blind persons frequently find the entrances to

subways, the doorways to bakeries, and many similar destinations largely thru the sense of smell. The sense of smell is one that tires easily and, consequently, the blind person who is to use it to advantage must be alert to recognize and use quickly the information that he derives through it.

Kinesthetic sense: This may be a sense that you are not in the habit of calling by name, but it is one which is used every day. It is made up of the composite of the sensations resulting from the tensions and pressures upon muscles and tendons involved in any bodily movement. Close your eyes and put your arms over your head. You are not able to see your arms, but, by kinesthetic sensation, you know that they are there. By kinesthetic memory, you direct them to the position in which you wish to place them. Kinesthetic sensation becomes kinesthetic memory when you look back on it in your mind. It enables you to repeat muscular activities you have learned. Perhaps you are in the habit of entering your house in the dark and making your way in the dark to an electric light cord, avoiding obstacles. In doing this, you use the kinesthetic sense in much the same manner that a blind person uses it in moving about a familiar environment without faltering, with seldom passing beyond his desired destination, and with virtually no conscious awareness of how he directs his movements so effectively.

Tactile sense: The sense of touch contributes to a blind person's orientation and to his ability to move within his environment in two fundamental ways: It enables him to explore his environment and, in combination with the kinesthetic sense, to lend concreteness to his concept of the environment. This concreteness to his concept of the environment or substantial knowledge in turn provides the basis upon which he attaches meaning to the sensations which he derives thru his auditory and olfactory senses. There is a real danger in the failure of some blind persons to confirm through personal contact the impressions which they receive through other people's descriptions of commonplace objects. The examination tactually of fire engines, railroad coaches, racks with clothes, laundromats, airplanes and a multitude of similarly commonplace objects may impress the casual observer as a moder-

ately interesting experience; but for the blind person such experience provides the very foundation upon which his intellectual and emotional growth rests.

The development of the senses to provide the blind person an accurate conception of the environment he lives in and the training of the blind person to use the cane as an instrument to aid him in moving about effectively in his environment is accomplished through the implementation of a series of lesson plans which are built in relation to specific objectives. No definite period of time can be allotted to the carrying out of any of these lesson plans. The background of the trainee, physical condition of the trainee, mentality of the trainee, and the emotional and psychological preparedness of the trainee to undertake the learning of how to travel alone are all varying factors which will determine the speed with which given objectives will be achieved. An example of the objectives around which lesson plans may be built may be seen in the following:

Lesson Plan I:

Orientation of the trainee to the training floor and the resident areas of the building in which he is residing or working so that he may travel them along with a maximum of safety and a minimum of difficulty.

Lesson Plan II:

To teach the trainee the techniques of travelling inside a building with and without a cane.

Lesson Plan III:

To teach the trainee the rhythmic movement of the cane from side to side in proper synchronization with his step so as to enable him to detect obstacles or pitfalls in time to check his forward movements.

(After a thorough understanding of the first three lessons has been achieved by the trainee, he should be tested to see exactly what he has learned. It is at this stage that his bad habits must be observed and broken. He must not be allowed at this stage of his learning to develop any habits which are not in accord with the technique. As he becomes adept at the technique, slight variations may be made to suit the taste or personality of the individual, but definitely not at this stage of his learning.)

Lesson Plan IV:

To show the trainee that he can use the cane to determine his exact position at a corner and in what direction he is facing, and to show him a method of using the cane to cross a street, emphasizing that this method be reserved for use only under emergency conditions and that the only safe way to cross a street is with the aid of a sighted passerby.

Lesson Plan V:

To show the trainee how he may go up and down stairs using the cane with a maximum of safety and self confidence, and without having to resort to the slow shuffling movements which are so characteristic of the untrained blind person when he approaches or leaves a stairway.

Lesson Plan VI:

To teach the trainee how to follow a guide safely using the upper arm grip or the forearm grip as conditions may require and be alert to know just what is ahead by the movements of the guide.

Lesson Plan VII:

To develop a means of becoming aware, as fully as possible, of the make-up and the activities of the environment and thus to broaden the source of stimulation by practicing the localization and interpretation of sounds and odors.

Lesson Plan VIII:

To develop the use of the tactile and kinesthetic senses for obtaining fundamental, concrete information about the environment by practicing the proper techniques of following the building line, traversing a regular terrain, and examining obstacles and points of reference, etc.

The last six lesson plans are designed to give the trainee, who by this time has completed his basic training, an opportunity to acquire experience in coping with a variety of problems which the blind traveller may expect to encounter. They include: (1) a straight route without obstacles and with a minimum of pedestrians and traffic; (2) a rough route with obstacles, pedestrians and traffic; (3) a rough route with noises and odors, which the trainee is required to identify as he goes along; (4) a bus trip; finding the bus stop, getting into the bus, paying the fare, finding a seat, asking the driver or one of the passengers to tell the trainee when he reaches his destination.

and getting off the bus; (5) a subway trip: finding the subway entrance and turnstile, paying the fare, finding the train, finding a seat, noting the curves, the side of the train on which the door opens, and similar cues that identify the trainee's destination, leaving the train at the proper station, and finding the way to the street; (6) combining as many as possible of the tasks included in the preceding five lessons to see whether the trainee remains relaxed, handles the public well, does not get panicky when confused and, in general, is able to travel with the skill and self confidence that a well trained blind traveller can enjoy.

The above will give the reader a small idea of what we are doing at the Industrial Home for the Blind in Brooklyn. It should not be thought of as a complete outline of our work. The time and space allotted here would not permit such a summary. However, it is rather a brief indication of what we are doing in our Orientation and Foot Travel course.

In working with our blind men, we plan our campaign carefully. We must train the blind to act as though they were sighted. If the blind do not look and act as the sighted, then and only then do they become conspicuous in the social group. The too obvious blind person may find it difficult to get along because many of the public will regard him with a suspicion of deafness or even mental deficiency. We impress on these men that they are not helpless and afflicted but able to travel and work as long as they have the will to do so. We always use a positive approach. The blind are normal human beings who have lost the sense of sight. They are nothing more and nothing less.

Author's Note: In a program of this sort where an instructor must always be conscious of the physical, emotional and mental changes in the individual and where the instructor must constantly try to build the man's physical well being to keep the man from deteriorating physically because he cannot see what proper body posture and position are, the instructor should be a man with a well versed background in corrective therapy, mental hygiene, and psychology.

Survey Report on a Potential Advanced Curriculum of Study for Corrective Therapy

KARL K. KLEIN

Assistant Professor Physical Education

This survey was instituted in the interest of the preparation of future personnel for the field of Corrective Therapy. As previously expressed by authority, the new people going into the field are not adequately prepared for this specialized field.

The following colleges and universities were found, through contact, to have specific course material related to the field of Corrective Therapy at the time the survey was in progress: Springfield College, Springfield, Mass.; New York University, New York, N. Y.; Columbia University, New York, N. Y.; Ithaca College, Ithaca, New York; and Ohio State University, Columbus, Ohio. Three of the schools, Springfield, New York University and Columbia, have their courses established on the graduate level. Ithaca College courses are offered on the elective basis on the undergraduate level.

The courses offered by these schools were compiled and prepared as a questionnaire form with an accompanying letter to be forwarded to the Directors of Physical Medicine of the various Veterans Administration Hospitals. (Appendix A1, 2). One hundred and twenty-six forms were forwarded to this source. Also, eight such forms were forwarded to other doctors of Physical Medicine in capacities other than that mentioned above.

The objective of the questionnaire survey was to have these doctors of Physical Medicine act as a jury of experts to do the curriculum evaluating for a future curriculum definitely relating to the field of Corrective Therapy.

Course material other than those included in the survey form as suggested by the evaluating doctors may be found in Appendix B. Much of this material

could be absorbed into the original listing of courses but should be considered in the final analysis.

A total of one hundred and thirty-four questionnaires were sent out. The total replies received numbered one hundred and seven, representing a reply of a slight fraction under eighty percent.

The final evaluation by these doctors of Physical Medicine are as follows:

Column 1 indicates the courses as rated to primary importance in the curriculum.

Column 2 indicates the courses as they were rated to be an asset to the program.

	Column 1	Column 2
1. Body mechanics and kinesiology	80(6)	13
2. Anatomy (functional)	77(6)	14
2. Corrective Physical Education applied to pathological conditions	74(6)	17
4. Methods of rehabilitation	56(6)	35
3. Supportive methods	53(3)	36(3)
3. Physiology applied to general conditioning	53(3)	47(2)
4. Principles, organization and administration of physical education	53(2)	34(3)
5. Advanced corrective physical education	46(3)	40
5. Evaluation of muscle function	45(2)	41(2)
6. Physiology of exercise (advanced)	40(2)	45(3)
6. Recreational Therapy and adapted sports	30(2)	55(4)
7. Ethics and medical terminology	25	57(4)
8. Methods of relaxation	25(1)	55(5)
9. Neurology and psychiatry	25(1)	54(3)
9. Pathology	24(2)	55(3)
10. Abnormal psychology	21(1)	55(4)
10. Clinical psychology	21(2)	55(1)
11. Hospital practice	18(4)	57(1)
12. Individual physical education	17(1)	48(1)

() Indicates opinion of Physical Medical authority other than those directly in charge of Veterans Administration Depts. of Physical Medicine. Included in total figure of column.

The number of replies received from the other doctors of Physical Medicine who are considered as authorities in the field is indicated in the parenthesis in each column and is included in the total count. Only six of these doctors actually

checked the questionnaire. One did not choose to comment. Their opinion of the four top ranking courses being offered correlates with the majority of opinion of the Veterans Administration P.M.R. Directors. In most of the others, there is a division of opinion as may be found in the V. A. Directors' opinions. In most cases the weighing of opinion is on a comparable basis with the weighing of the V. A. authorities. This indicates that the opinions of both sources show similar trends of thought concerning the course material vital to the advanced curriculum program.

It is to be assumed that because of the high percentage of questionnaires returned that there is a definite desire of the doctors, related to Corrective Therapy, to aid in the advancement of this group, both professionally and educationally.

If the medical evaluation of this survey were to be used as a guide for developing an advanced curriculum of study it would be advisable to use the total evaluations as indicated in Column No. 1 of the evaluation table. The extent of such a curriculum would have to be controlled by the requirements of institutions offering such a course of study. Because of the close relationship between the first and last course in medical evaluation, the problem of the selection of the basically important courses will necessitate careful consideration by those making the selection. If these courses were presented on a two-hour basis for each semester (assuming two semester in a school year), it would be possible to present material in all phases of the suggested courses. This would allow time for those courses needing additional hours for instruction in order to completely cover the field. Also, consideration could be given to some of the suggested specialized study indicated in Appendix B. Some of the suggested courses in this area indicate the more specialized aspects of Corrective Therapy application. A careful study of the work being carried on in these fields would have to be made before presentation of such material as a course of study. It would be advisable to obtain such information from the Veterans Administration Hospital, Corrective Therapy Departments.

Certain inadequacies may be found in

any questionnaire study and the writer realizes that such exist in this one. Nevertheless, the indications for advanced study in this field are evident by the evaluation and certainly it would be difficult to find a more adequate jury for such an evaluation than those selected, the Directors of Physical Medicine directly related to the field of Corrective Therapy.

APPENDIX A1

ITHACA COLLEGE

Ithaca, New York

Director

Department of Physical Medicine Rehabilitation Service

Veterans Administration Hospital

Dear Doctor:

This survey is being made in an effort to find means whereby the training standards for future professional people in the field of Corrective Therapy may be improved.

As you undoubtedly know, the background of training for workers in Corrective Therapy in the Veterans Administration is a degree in Physical Education. This requirement almost universally includes courses in anatomy, physiology, psychology, corrective physical education, physiology of exercise, kinesiology, physics or chemistry, personal hygiene and physical activity skills. It is felt by many workers in the field, however, that further specialized training would greatly aid the future standards of the profession.

At the present time a few colleges and universities are offering advanced work in Corrective Physical Education; these courses are listed on the enclosed questionnaire. None of the schools surveyed offer all of the courses mentioned but approximately any combination of ten to fifteen constitutes a year of advanced study. It would seem logical to assume that some courses would be of more value than others. The problem, therefore, is in the evaluation of these courses. This, of course, can be accomplished only thru an evaluation by a jury of experts.

It is our feeling that the Doctor of Physical Medicine would constitute the most satisfactory jury of experts to do this curriculum evaluating.

As a Doctor of Physical Medicine your interest in this problem, by evaluating

the enclosed questionnaire, will be greatly appreciated.

Sincerely,

Karl K. Klein, Member Association for Physical and Mental Rehabilitation.

APPENDIX A2

Survey of courses being offered in Corrective Physical Education that are related to the field of Corrective Therapy.

- 1—Double check those of prime importance.
- 2—Single check those that would also be an asset to the program.
- 3—Add any other course titles that you feel would be desirable in the curriculum.

Advanced courses being offered	Check here as indicated
1. Anatomy (functional)	
2. Abnormal Psychology	
3. Body Mechanics & Kinesiology	
4. Corrective Physical Education applied to Pathological Conditions	
5. Clinical Psychology	
6. Ethics and Medical Terminology	
7. Evaluation of Muscle Function	
8. Methods of Rehabilitation	
9. Neurology and Psychiatry	
10. Physiology Applied to General Conditioning	
11. Pathology	
12. Principles, Organization and Administration of Physical Reconditioning	
13. Recreational Therapy and Adapted Sports	
14. Supportive Methods (crutch Procedures)	
15. Hospital Practice	
16. Methods of Relaxation	
17. Physiology of Exercise (advanced)	
18. Advanced Corrective Physical Education	
19. Individual Physical Education	

Please add below any other course titles that you feel would be desirable as a course in the curriculum.

Do you desire a copy of the tabulated replies to this questionnaire? Yes _____

No. _____
 Your Name _____
 Position _____
 Address _____

APPENDIX B

The following course material has been suggested to be included in the curriculum over and above the courses mentioned in the survey. The right column indicates the number of times this additional material was suggested by evaluating authority. Such material could be included in the courses of the original survey or set up as additional courses in the total curriculum.

1. Fundamentals of prosthetic appliances ... 8
2. General physical and occupational therapy orientation 8
3. Special techniques—swing therapy, hydro-gymnastics and adapted equipment 3
4. Anatomical changes occurring follow-

- ing thoracic surgery (T. B. & non T. B.) 2
5. Methods of maintaining skeletal alignment and muscle balance following thoracic surgery 2
6. Psychology of the disabled 2
7. Tests and measurements in corrective therapy 2
8. Corrective therapy and application to psychiatric patients 2
9. Orthopedic disabilities 2
10. Muscle re-education 2
11. Methods for measuring physical tolerance and work capacity 1
12. Motion habit patterns 1
13. Motivation techniques (patient-therapy psychology) 1
14. Neurosurgical disabilities 1
15. Neuro-anatomy 1
16. Pathology of loco-motor system 1
17. Principles of medicine, surgery, hygiene ... 1

The Application of Corrective Therapy Procedures in the Pre-prosthetic Treatment of Amputees

WILLIAM J. ZILLMER

Chief, Corrective Therapy, V. A. Hospital (Billings)
 Ft. Benjamin Harrison, Indiana

Pre-operative orientation of the patient about to become an amputee, is of great importance in aiding him to make the proper psychological adjustments. Most patients know very little about prosthetic appliances and their usage. When possible it is advisable to have an amputee contact the patient before surgery. He should show him his own artificial limb and demonstrate how it functions. If this is not possible or practical the same objectives can be accomplished to a lesser degree thru the medium of photographs. To reduce the degree of anxiety that accompanies the prospect of losing a limb is the objective of pre-operative orientation. A thorough explanation by the Corrective Therapist of the different stages of rehabilitation, with the relative length of time necessary in each stage, does a great deal to enable the patient to make the proper

psychological adjustment. Here is the story:

1. The surgeon thinks it is the best thing for you or he would not recommend amputation.
2. You will have some discomfiture with phantom pains after surgery; they all do.
3. You will be up in a wheel chair and on crutches in a few days after surgery.
4. You will begin mild active exercise as soon as you are allowed to stand.
5. Stitches are usually removed in about 10-14 days.
6. Hydrotherapy and light massage will begin as soon as the doctor prescribes it.
7. As soon as the stump is dry, shrinkage will be started to reduce superficial flesh and shape the stump for a prosthesis.
8. Active and resistive exercises for

power and range of motion is also begun.

9. Two or three weeks after the stump is dry and sufficient shrinkage is accomplished, you will be measured for your artificial limb.

10. After you are measured you will continue to exercise the stump as well as the rest of the body to condition yourself for the new leg.

11. Four or five weeks after measurement you will go to limb shop for your rough fitting. The size and shape of the stump should be nearly standardized by that time.

12. It will take three or four more weeks for the limb manufacturer to finish the leg, and during that time you will continue your conditioning exercises.

13. When the limb is finished, you will be taken to the shop for your final fitting and you will bring the leg back to the hospital and begin gait training.

14. Thorough training in the use of the prosthesis will enable you to do all the activities inherent to daily living. What you can accomplish will depend on you.

15. The average length of time from surgery to discharge is from three to five months.

Pre-prosthetic treatment should be well understood by the patient and well planned by the therapist. It will cover a span of several months and the problem is to set up the goal and attain same through systematic progressive steps of accomplishment.

Most amputees are easily sold on the idea of compensating for their loss by overdeveloping the unaffected parts of the body. They realize that a strong remaining leg and foot is necessary for crutch walking and proper use of the prosthesis later on. Good balance is of cardinal importance, which comes only with the overdevelopment of the remaining leg and the back and abdominal muscles. It should also be stressed that learning to use an artificial limb is extremely hard work and to be in optimum physical condition is of great importance.

Proper exercises for the stump is, of course, another responsibility of the Corrective Therapist. It is important to know the natural contractures and to begin exercises early to prevent same. Below the knee amputees should begin quadriceps exercise early, which will preserve normal range of motion in the knee joint.

Graduated exercise will develop strength and range of motion of the stump. Some of the common causes of flexion contractures are (1) allowing the patient to lie with towel or pillow under the stump to relieve pain, (2) stump flexion while riding in a wheelchair or crutch walking, (3) standing with stump flexed in the crutch handle for a balance.

Above knee amputees have to guard against flexion and abduction contractures which come about due to the same causes. The patient should be made cognizant of his problems early so he can guard against their evils. Early range of motion tests will encourage the patient to exercise properly, and he will soon become proud of his pre-prosthetic accomplishments.

In exercising on above knee stump, care should be taken to not allow the pelvic girdle to tip forward or sideways when the stump is hyperextended and adducted. All the motion should be in the hip joint with the pelvis held firm.

When to begin the various stages of exercise is of great importance. Light active motion should be begun with the doctor's permission, a few days after surgery without trying to get full range of motion. If the physician advises, hydrotherapy can be used to aid the healing process. When the stitches are removed, stump kneading should follow the hydrotherapy treatment. This allows the stump to become more pliable in healing. It also desensitizes, loosens and toughens the stump which, of course, are assets in the early stages of using a prosthesis. As soon as the stump is completely free of drainage, active assistive and resistive exercises should be begun. Care should be taken not to exercise the antagonistic muscles of the weak ones or you will not correct muscular imbalance. When proper range of motion is lacking it becomes necessary to stretch the flexors and adductors manually or by suspended weights.

When to begin shrinkage is another problem. Wrapping with a small amount of tension may be started as soon as the stump is dry. After one week of this, more tension can be applied, the objectives being to support the circulation, and to give the stump a conical shape from the ischial seat to the distal end of the stump. Another important objective of shrinkage is to remove excess fatty

tissue before the fitting of the prosthesis. Inadequate shrinkage before final fitting decreases the length of satisfactory service of the original prosthesis, because walking on the artificial limb will bring about too much necessary additional shrinkage. Then additional stump socks must be added, and later a leather liner will be necessary. Very soon the socket will be so large that a new prosthesis is necessary. The amount of shrinkage tension to be applied is variable with different types of amputees. Below knee amputees require less shrinkage than a mid thigh, and the heavy fleshy type needs a greater amount of shrinkage. The tension used should be graduated and the tightest shrinker should not cause edema, discoloration or discomfort of the stump. Peripheral vascular cases need less shrinkage and more exercise in preparing for a prosthesis. All stumps should be wrapped with the pressure toward the end of the stump to aid in loosening the scar tissue. Below knee amputees should use 2" shrinkers and above knee patients use wider elastic bandages. For an optimum thigh stump, two, four-inch shrinkers are recommended, and the pressure should be applied evenly from the ischial seat to the distal end. Try to avoid wrinkles in the bandages for they cause constriction rings around the stump.

Self bandaging of thigh stumps is not recommended and it is almost impossible to satisfactorily apply shrinkage on a short thigh stump.

The elastic bandages should be laundered often to renew their elasticity. They should be washed in luke warm water and laid out on a flat surface to dry. When the ace bandage does not recover its elasticity after laundering, new shrinkers are needed.

The suction socket stump needs less shrinkage and should take more of a cylindrical shape. Using this new type of prosthesis usually brings about less shrinkage and often times the muscles of the stump will develop with use of the prosthesis.

There are several approved techniques of applying shrinkers. The main objective is to give it an even conical shape with a loose pliable padding over the end of the stump.

Proper pre-prosthetic training will shape the stump, correct postural defects, and insure adequate range of motion and strength to activate the prosthesis properly. The patient is now ready to select his prosthesis. This matter should be a cooperative effort of the surgeon, the physiatrist, the limb manufacturer, and the patient. The surgeon knows what type of prosthesis his surgery calls for. The physiatrist evaluates the patient's pre-prosthetic progress, considering his age, general physical condition and the psychological aspects of the problem. The limb manufacturer should recommend the technical aspects of the limb best suited to the individual's needs.

V. A. regulations state that an amputee has a choice of approved limb manufacturers within a specified range of miles from his regional office. There are however, several practical considerations to be taken in this problem: (1) quality of workmanship, (2) speed of getting the finished product, (3) proper fitting, (4) adequate adjustments during prosthetic training, (5) availability of repair service on the leg after discharge.

Many of these problems can be minimized by selecting the closest satisfactory limb manufacturer. Better relationships can be established if the surgeon, the physiatrist, and the limb manufacturer meet and discuss the whole plan of furnishing the patient with a satisfactory fitting prosthesis. Having the manufacturer readily accessible has a great advantage in getting the fittings and adjustments that are necessary during the patient's rehabilitation stay in the hospital. An intelligent evaluation of the original fitting, along with close supervision of the necessary changes as he learns to use the prosthesis, aids greatly in building confidence in the use of an artificial limb.

It is not the make of limb, or the type of material used, but the fitting that counts. No artificial limb is right unless it feels comfortable to the wearer and he is able to put it on in the morning when he arises and keeps it on during his entire day's activities.

Ambulation for Paraplegics

VINCENT J. BRUNO

Supervisor-Corrective Therapist, Halloran V. A. Hospital
Staten Island, New York

Once the foundation of a well conditioned body has been established, the second phase of Corrective Therapy may be embarked upon, namely ambulation. Ambulation, for Paraplegics, has as its objective a two fold mission which is:

1. To improve and retain the health and physical fitness of the paraplegic by helping to prevent medical complications such as urinary infections, decubitus ulcers and osteoporosis.
2. To develop the effective use of the skills and techniques required in ambulation in order to enable the patient to perform within the highest limits imposed by his disability.

A successful ambulation program must be designed to afford the patient a safe and progressive program of standing and walking which meet his individual needs, interests and abilities. Patients having normal strength, flexibility and coordination of the upper extremities and trunk, find little difficulty in learning the skills and techniques of ambulation, provided there are no contracture deformities of the lower extremities.

The preliminaries of crutch walking instruction are given in wide parallel bars which allow for freedom of crutch management. Techniques of the proper crutch stance, control of body balance, weight shifting, and walking gaits are fundamentals which must be mastered before the patient is permitted to progress to crutch walking outside of the parallel bars.

The posture involved in the correct crutch stance is a position in which the patient assumes the tallest natural body alignment. The cardinal factors involved in the correct crutch stance are:

1. Crutches are placed about four inches forward and four inches sideward, allowing a large base for stability and movement.
2. Arm-pit rests are placed against the ribs and are held there by pressure exerted by the arms.
3. Elbows are slightly bent.
4. The weight of the body is supported mainly on the lower extremities.

5. The head is erect, the shoulders are back and the stomach is in.

6. The pelvis is aligned over the feet insofar as is possible.

Modification of the correct crutch stance, must be allowed for, in order to provide for any peculiarities a patient may manifest as a result of the level and type of lesion. Patients with no voluntary control or strength of the abdominals and low back muscles will find a tripod stance the most effective in attaining body balance.

If the patient takes an over-extended position so that the weight of the body falls in front of his hips with his back hyper-extended, he will automatically move into a balanced position. After self-confidence has been instilled in the patient through the establishment of the following skills, i.e.: point of balance, body weight shifting, and crutch manipulation, a dynamic program of ambulation is followed in accordance with the patient's physical capacity and diligence. Walking capabilities of the patients vary, depending upon the degree of their disability and the acquisition of skills.

The following walking gaits have been designed to meet individual needs.

(1) Shuffle Gait

(a) **Objective:**—To enable patients with low cervical lesions to move from place to place.

(b) **Technique:**—

1. Tripod stance assumed.*
2. Advance crutches forward four to six inches simultaneously.
3. Lean forward slightly into crutches.
4. Bear down on hand pieces.
5. Slide feet along floor four to six inches.
6. Repeat.

(c) **Comment:**—

This method of walking is very slow and exhausting, however, it is the only practical way for patients having very little muscular return to ambulate.

(2) Swing to Gait

(a) **Objective:**—To enable the paraplegic with high thoracic lesions to walk as effectively as his disability will allow.

(b) **Technique:**—

1. Tripod stance assumed.
2. Advance crutches forward four to six inches simultaneously.
3. Lean forward onto crutches.
4. Bear down on crutch bars, lifting body.
5. Swing forward placing feet up to crutches.
6. Repeat.

(c) **Comment:**—

This gait is slow, in many cases it is taught primarily as preparation for the more difficult swing through gait.

(3) Swing Through Gait

(a) **Objective:**—To enable paraplegics to locomote as effectively and as rapidly as the individual disability will permit.

(b) **Technique:**—

1. Tripod stance assumed.
2. Advance crutches forward four to six inches simultaneously.
3. Lean forward onto crutches until the pressure on rear tips is re-distributed to the front end.
4. Bear down on crutch bars lifting body.
5. Swing body through, placing feet well ahead of crutches. Lift the head as feet hit the floor.
6. Balance from this position by pushing backward against crutches, thrusting hips forward and hyper-extending the back.
7. Pivot body forward on feet placing crutches forward.
8. Repeat.

(c) **Comment:**—

This walking gait is taught to all paraplegics who are physically able to perform it. Its rhythmical movement enables the patient to walk with the minimum of effort and the maximum of speed.

(4) Four Point Alternate Gait

(a) **Objectives:**—To enable the patient with sufficient voluntary hip flexion to move one foot at a time, to walk as effectively and as safely as possible.

(b) **Technique:**—

1. Advance left crutch forward.
2. Advance right foot forward.
3. Advance right crutch forward.
4. Advance left foot forward.

(c) **Comment:**—

This gait is slow because its execution involves constant weight shifting. It is advantageous for walking in small and crowded areas and when safety is of the utmost importance. Its movements exercise all muscles with residual function.

(5) Two Point Alternate Gait

(a) **Objective:**—To enable the patient to ambulate as effectively and as normally as his disability will permit.

(b) **Technique:**—

1. Advance right crutch and left foot simultaneously.
2. Advance left crutch and right foot simultaneously.

(c) **Comment:**—

The performance of this gait requires more balance, however, it accelerates the speed over the four point alternate gait.

The following guiding principles will help to insure good instruction for safe walking:

- (1) Inspect braces and crutches for defects.
- (2) Assume a position behind and slightly to the side of the patient so that freedom of independent motion is allowed.
- (3) As the patient advances forward, move with him in order to recognize and correct improper walking movements.
- (4) In the event of jack-knifing or body instability, assist the patient to assume the correct posture by placing

your right hand on the small of the patient's back and at the same time pull his left shoulder back with your left hand, thereby re-establishing balance. The pressure applied by the therapist's right hand will assist the patient in tilting his pelvis forward. The therapist's left hand is utilized to control the forward impetus of the patient's body and to re-establish hyper-extension of the back.

Braces, for patients with spinal cord lesions, are intended to restore the function of the lower extremities as a weight bearing support for the body. In order for braces to perform the function for which they are intended, they must be prescribed, fitted and incorporated with corrective features that will allow maximum support, usefulness and comfort to the patient.

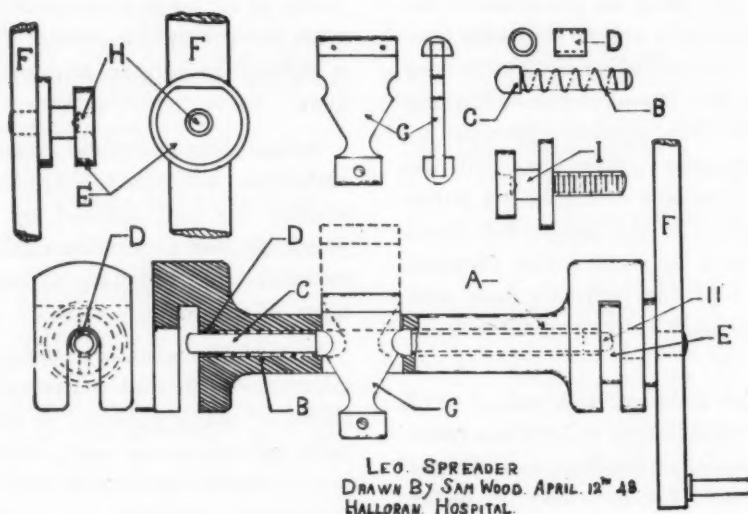
The construction of braces will vary according to individual requirements. Dr. Henry H. Jordan in his book "Orthopedic Appliances" describes the fundamental elements of leg braces as follows: "Common to all leg braces are the supporting bars which brace the extremity on one or both sides, running parallel to the longitudinal axis of the extremity. These bars, forged of surgical steel, carry the joints at the ankle, the knee, and the trochanter. They are connected with each other by semi-circular bands, as a rule made of sheet steel. Both longitudinal bars and the transverse connecting bands form the steel skeleton of the brace. Finally, we have, in the ma-

jority of all leg braces, a connecting link with the ground; a patten, a sandal, or a stirrup or caliper attachment to the shoe."

Spinal braces, pelvic bands and leg spreaders are special appliances prescribed for and utilized by the paraplegic patient to provide added support necessary for promoting balance and stability of the body.

One of the greatest problems which interferes with and limits the rehabilitation of many patients, is severe spasticity of the lower back, abdomen and legs. Patients problemed with spasticity find great difficulty in establishing a point of balance. In order to compensate for body instability caused by rotation or scissoring of the legs, a correction appliance known as the "leg spreader" has been used with great success. The principle of the "leg spreader" is to mechanically offset improper alignment of the lower extremities by producing a static alignment of the legs essential for correct body balance.

Of the many varieties of "leg spreaders," the one found most successful has been designed and constructed by Mr. Samuel Woods, an employee of Halloran V. A. Hospital Orthopedic Brace Shop. Its success can be attributed to its fabrication which enables the patient to attach or detach it from his braces easily and with little discomfort. The details of construction of this "leg spreader" are to be noted in the following illustration:



Piece "A" is made from $1\frac{1}{4}$ " x $1\frac{1}{2}$ " x $4\frac{1}{2}$ " aluminum. It is drilled out for springs "B", pins "C" and bushing "D".

The ends are cut away to fit anchor piece "E", shown fastened to inner longitudinal bars of braces "F".

To attach the "leg spreader" place it down on anchor piece "E". Lock "G" is pressed down which automatically brings forward pins "C" into hole "H", locking the spreader into position. To detach lock "G" is raised which releases pins "C".

The leg spreader can be used on the tubicular brace by using the threaded anchor piece "I" at the anchor joint.

Crutches, elbow crutches, and canes are walking aids which assist in maintaining balance essential in walking. The walking aid to be used depends upon the extent of the disability and the skill of the patient.

The following case histories are presented in an effort to illustrate the relationship between various spinal cord lesions and what ambulation abilities may be anticipated.

Case No. 184: A paraplegic with loss of sensory and voluntary motor function below the level of C7. He has good strength and motion in his upper arms. There is some atrophy of the right forearm with inability to flex completely the fingers of his right hand. Mild spastic.

Appliances: Full length caliper leg braces. Night spinal brace and crutches.

Walking Gaits: Shuffle.

Test Results: Gait, Shuffle; distance, 90'; time, 135 sec.; No. of strides, 180; average strides, 6".

Case No. 23: A spastic paraplegic level of D4 with no volitional power below the level of injury.

Appliances: Full length caliper leg braces, detachable pelvic band and crutches.

Walking Gaits: Shuffle, swing to-swing through.

Test Results: Gait, swing to-swing through; distance, 90'; time, 100 sec.; No. of strides, 45; average strides, 2'.

Case No. 169: A spastic paraplegic level of D4 with sensory and voluntary motor loss below the level of the lesion.

Appliances: Full length caliper leg braces, detachable pelvic band and crutches.

Walking Gaits: Shuffle, swing to-swing through.

Test Results: Gait, swing to-swing through; distance, 90'; time, 75 sec.; No. of strides, 40; average strides, 2' 3".

Case No. 3: A paraplegic level of D-10 with mid-thigh amputation of left leg. Complete flaccid paralysis of lower extremity.

Appliances: Full length caliper leg brace and crutches.

Walking Gaits: Shuffle, swing thru.

Test Results: Gait, shuffle; distance, 90'; time, 60 sec.; No. of strides, 45; average strides, 2'. Gait, swing through; distance, 90'; time, 32 sec.; No. of strides, 20; average strides, 4' 5". Gait, swing through; distance, 300'; 110 sec.

Case No. 5347: A paraplegic 4-11 complete. Upper portion of Rectus Abdominis unaffected. Small amount of spasms present in lower extremities.

Appliances: Full length braces and crutches.

Walking Gaits: Swing to, swing thru.

Test Results: Gait, swing to; distance, 90'; time, 42 sec.; No. of strides, 40; average strides, 2' 2". Gait, swing through; distance, 90'; time, 31 sec.; No. of strides, 19; average strides, 4' 7". Gait, swing through; distance, 300'; time, 106 sec.

Case No. 957: A spastic paraplegic, Guillain Barre syndrome, level of D-11 with return of sensory and motor function below the lesion. Severe spasms of the legs allows partial voluntary muscular control of his legs.

Appliances: Full length caliper leg braces and elbow crutches.

Walking Gaits: Four point alternate, swing through.

Test Results: Gait, 4 pt. alternate; distance, 90'; time, 60 sec.; No. of strides, 48; average strides, 1' 9". Gait, swing through; distance, 90'; time, 28 sec.; No. of strides, 18; average strides, 5'. Gait, swing through; distance, 300'; time, 89 sec.

Case No. 14: A paraplegic level of D8, incomplete, with return of sensation and motor power in the lower extremities. There are mild spasms of the left leg, and severe spasms of the right leg. These involuntary spasms permit partial voluntary muscular control of the legs.

Appliances: Full length caliper leg brace (right leg) and a cane.

Walking Gaits: Two-point alternate.

Test Results: Gait, two-point alternate; distance, 90'; time, 36 sec.; No. of strides, 50; average strides, 1' 8". Gait, two-point alternate; distance, 300'; time, 122 sec.

Case No. 35: Paraplegic with sensory and voluntary motor loss below level of D9. There are no spasms.

Appliances: Full length caliper leg braces, leg spreader and crutches.

Walking Gaits: Swing to, swing thru.

Test Results: Gait, swing to; distance, 90'; time, 60 sec.; No. of strides, 45; average strides, 2'. Gait, swing through; distance, 90'; time, 45 sec.; No. of strides, 24; average strides, 3' 8".

Case No. 1909: A paraplegic level of D9 and 10 with no voluntary control of the muscles of his lower extremities. There is a marked degree of spasms of the legs, low back and abdomen.

Appliances: Full length caliper braces, leg spreader and crutches.

Walking Gaits: Swing to, swing thru.

Test Results: Gait, swing through; distance, 90'; time, 32 sec.; No. of strides, 21; average strides, 4' 3". Gait, swing through, 300'; time, 106 sec.

Case No. 141: A paraplegic with flaccid paralysis below the level of the 12th thoracic vertebrae.

Appliances: Full length caliper leg braces and crutches.

Walking Gaits: Swing to, swing thru.

Test Results: Gait, swing to; distance, 90'; time, 50 sec.; No. of strides, 45; average stride, 2'. Gait, swing through; distance, 90'; time, 30 sec.; No. of strides, 22; average stride, 4'. Gait, swing through; distance, 300'; time, 107 sec.

Case No. 7086: A paraplegic D-12 resulting in sensory and voluntary motor loss below the level of injury.

Appliances: Full length leg braces and crutches.

Walking Gaits: Swing to, swing thru.

Test Results: Gait, swing through; distance, 90'; time, 28 sec.; No. of strides, 18; average stride, 5'. Gait, swing thru; distance, 300'; time, 92 sec.

Case No. —: A paraplegic level of L-1 with return of function to right thigh and leg. Complete loss of motor ability of left leg.

Appliances: Drop foot brace, full length caliper brace and crutches.

Walking Gaits: Four-point alternate, swing through.

Test Results: Gait, 4-pt. alternate; distance, 90'; time, 75 sec.; No. of strides, 65; average stride, 1' 3". Gait, swing through, 90'; time, 34 sec.; No. of strides, 24; average stride, 3' 8". Gait, swing through; distance, 300'; time, 120 sec.

Case No. 12: A paraplegic L3, with partial return of motor function below the level of injury. Has marked atrophy of the muscles below the knees and of the gluteal muscles.

Appliances: Full length caliper brace (left leg), drop foot brace (right leg) and crutches.

Walking Gaits: 4-point alternate, swing through.

Test Results: Gait, 4-pt. alternate; distance, 90'; time, 37 sec.; No. of strides, 50; average stride, 1' 8". Gait, swing through, 90'; time, 33 sec.; No. of strides, 23; average stride, 3' 5". Gait, swing through; distance, 300'; time, 110 sec.

Case No. 6130: A paraplegic of L1, with partial return of muscular function in both lower extremities. Medical examination indicated that he has good power in his thighs and legs, but no power in his ankles.

Appliances: Drop foot braces and canes.

Walking Gaits: 2-pt. alternate.

Test Results: Gait, 2-pt. alternate;

distance, 90'; time, 32 sec.; No. of strides, 45; average stride, 2'. Gait, 2-pt. alternate; distance, 300'; time, 105 sec.

Case No. 137: A paraplegic L2 with partial sensory and motor return below the level of injury. Bilateral clawfoot with hammer toes causes some instability while walking.

Appliances: None.

Walking Gaits: Normal. Slight limp left side.

Test Results: Gait, normal; distance, 90'; time, 30 sec.; No. of stride, 45; average stride, 2'. Gait, normal; distance, 300'; time, 103 sec.

As the patient acquires further ambulation skills such as: walking backwards, sideways and turning around, instruction is devoted to a program of self-activated movements directed toward the restoration of maximum self-care activities. This final phase of corrective therapy will be discussed in a subsequent paper.

The author acknowledges with gratitude the invaluable assistance of Mr. Walter Vukelic and Mr. John Geimhardt, paraplegic patients at Halloran Veterans' Administration Hospital, for their contribution in providing all photographs in this article.

opinions expressed or conclusions drawn by the author.
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Tentative Program

ASSOCIATION FOR PHYSICAL & MENTAL REHABILITATION THIRD ANNUAL SCIENTIFIC & CLINICAL SESSION HOTEL NEW YORKER, NEW YORK CITY, N. Y. MAY 18, 19, 20, AND 21, 1949

All meetings, unless otherwise stated, will be held in the North Ballroom. Exhibit booths are on display at all times. Scheduled time for lectures subject to change.

Convention Chairman—Leo Berner, Chief, Corrective Therapy, Veterans Administration Hospital, Bronx, New York.

WEDNESDAY, MAY 18, 1949

8:00 a.m. Registration and Exhibits.

Morning Session

- 9:00 a.m. Official Welcome—Sam Boruchov, President Association for Physical & Mental Rehabilitation; Chief, Corrective Therapy, Veterans Administration Hospital, Northport, New York.
- 9:05 a.m. "Therapeutic Exercises in Rehabilitation", Hans Kraus, M.D., Institute of Rehabilitation & Physical Medicine, New York University, Bellevue Medical Center.
- 9:40 a.m. "Corrective Therapy in the Management of the Amputee," Henry H. Kessler, M.D., Director, Rehabilitation Institute, New Jersey.
- 10:15 a.m. "Evolution of Physical Medicine Rehabilitation," Richard Kovacs, M.D., Secretary, American Congress of Physical Medicine.
- 10:50 a.m. Panel Discussion. Exercise in the Treatment of the General Medical & Surgical Patient.
Chairman: Harry Kessler, M.D.; Hans Kraus, M.D.; Henry Kessler, M.D.; Richard Kovacs, M.D., and H. S. Whiting, M.D.
- 11:25 a.m. "The Role of Corrective Therapy in Physical Medicine Rehabilitation," A. B. C. Knudson, M.D., Chief, Physical Medicine Rehabilitation, Veterans Administration, Washington 25, D. C.

Welcome Luncheon

- 12:30 to 2:00 p.m. "Rehabilitation, Its Place in Medical Care," Howard A. Rusk, M.D., Director, Institute of Rehabilitation & Physical Medicine, New York University—Bellevue Medical Center.

Afternoon Session

- 2:45 p.m. "Corrective Therapy, an Orientation as to Its Meaning and Function," John Eisele Davis, ScD., Chief, Corrective Therapy Veterans Administration, Washington 25, D. C.
- 3:35 p.m. "Corrective Therapy for the Neuropsychiatric Patient," Harvey J. Tompkins, M.D., Chief, Neuropsychiatric Division, Veterans Administration, Washington 25, D. C.
- 4:15 p.m. "The Role of Corrective Therapy in a Total Push Program for Neuropsychiatric Patients," William Harris, M.D., Psychiatrist, Veterans Administration Hospital, Northport, New York.

THURSDAY, MAY 19, 1949

Morning Session

- 8:00 a.m. Registration and Exhibits.
- 9:00 a.m. "Rehabilitation in Poliomyelitis," Jack Lovelock, M.D., Rehabilitation Institute, Great Britain.
- 9:30 a.m. "Physical Reconditioning—U. S. Army Air Forces," Major J. B. Parsons, M.S.C., U.S.A.A.
- 9:55 a.m. "Development of Physical Medicine Rehabilitation in Civilian Hospitals," Donald A. Covalt, M.D., Clinical Director, Institute of Rehabilitation & Physical Medicine, New York University—Bellevue Medical Center.
- 10:45 a.m. "Physical Reconditioning in the U. S. Army," "Methods of Evaluation," Cecil W. Morgan, Ph.D., Chief, Physical Reconditioning Branch, U. S. Army.
- 11:20 a.m. "Rehabilitation in the New York City Hospitals," Marcus D. Kogel, M.D., Commissioner of Hospitals, New York City, N. Y.
- 11:40 a.m. Panel Discussion—Trends in Physical & Mental Rehabilitation.
Chairman: Marcus D. Kogel, M.D.; Jack Lovelock, M.D.; Donald A. Covalt, M.D.; Cecil W. Morgan, Ph.D.
"Corrective Therapy in Great Britain," Jack Lovelock, M.D., Great Britain.

Afternoon Session

- 1:30 p.m. "Therapeutic Exercises for Multiple Sclerosis," Rene Cailliet, M.D., Medical Supervisor, Kabat-Kaiser Institute, Washington, D. C.
- 2:15 p.m. Exhibits.
- 2:45 p.m. "Rehabilitation of the Chronic Medically Ill," Otto Eisert, M.D., Chief, Physical Medicine Rehabilitation, Veterans Administration Hospital, Manhattan Beach, N. Y.
- 3:35 p.m. "The Neuropsychiatric Patient," Edward D. Greenwood, M.D., Director, Southard School, Menninger Foundation, Topeka, Kansas.
- 4:15 p.m. Panel Discussion—Geriatrics.
Chairman: H. L. Flowers, M.D., Chief, Neuropsychiatric Service, V. A. Hospital, Bronx, N. Y.; C. Baganz, M.D., Manager, V. A. Hospital, Lyons, New Jersey; R. Cailliet, M.D.; O. Eisert, M.D.; E. Greenwood, M.D.

FRIDAY, MAY 20, 1949

Morning Session

- 8:00 a.m. Registration & Exhibits.
- 9:00 a.m. "Further Development of Objective Orthopedic Strength Tests," H. Harrison Clarke, Director, Graduate Studies, Springfield College.
- 9:35 a.m. "The History of Medical Gymnastics," Sidney Licht, M.D., Editor, Journal of Occupational Therapy & Rehabilitation.
- 10:00 a.m. Panel Discussion—"The Schools' Contribution to Corrective Therapy." Chairman Joseph Van Schoick, Executive Assistant, Physical Medicine Rehabilitation, Veterans Administration, New York City; H. Harrison Clarke, Springfield College, M. R. Fields & E. B. Stone New York University; J. L. Rathbone, Columbia University; A. S. Daniels, Ohio State University; K. K. Klein, Ithaca College.
- 11:35 a.m. "The Group Approach to Techniques in Relaxation," Josephine L. Rathbone, Associate Professor, Physical Education, Columbia University.

Afternoon Session

- 1:30 p.m. "Exercises for Paraplegics," Arthur S. Abramson, M.D., Assistant Chief, Physical Medicine Rehabilitation, V. A. Hospital, Bronx, N. Y.
- 2:15 p.m. "Fundamentals in Evaluating Disabilities," Louis B. Newman, M.D., Chief, Physical Medicine Rehabilitation, V. A. Hospital, Hines, Illinois.
- 2:45 p.m. "Vascular Adjustments in Exercise," Karl Harpuder, M.D., Chief, Physical Medicine Rehabilitation, Montefiore Hospital, New York.
- 3:35 p.m. "Social and Economic Implications of an Aging Population," Eugene J. Taylor, Editorial Board, New York Times.
- 4:15 p.m. Business Meeting—Elections.

SATURDAY, MAY 21, 1949

Morning Session

- 8:00 a.m. Registration and Exhibits.
- 9:00 a.m. "Prophylactic Rehabilitation as Illustrated by the Treatment of Bell's Palsy," William Bierman, M.D., Associate Professor of Physical Medicine, Mount Sinai Hospital, New York.
- 9:25 a.m. "Cerebral Palsy," Walter D. Matheny, Ph.D., Burnt Mills School for Paralysis Correction, New Jersey.
- 9:50 a.m. "Pharmaco-Dynamics of Exercise," Edward E. Gordon, M.D., Assistant Chief, Physical Medicine Rehabilitation, V. A. Hospital, Staten Island, New York.
- 10:15 a.m. "Rehabilitation of the Neuropsychiatric Patient," Johan H. W. Van Op-huijsen, M.D., Consultant Psychiatry, Veterans Administration, N. Y., Presbyterian Hospital, New York.
- 10:40 a.m. Panel Discussion—Physical Medicine Rehabilitation.
"Physical Therapy," Florence S. Linduff, Chief, P. T., Washington, D. C.
"Occupational Therapy," Dorothy D. Rouse, Chief, O. T., Washington, D. C.
"Corrective Therapy," John E. Davis, ScD., Chief, C. T., Washington, D. C.
"Educational Therapy"—
"Manual Arts Therapy," Joseph Van Schoick, Executive Assistant, Physical Medicine Rehabilitation, Veterans Administration, New York, N. Y.

Chairman—Russell Dean, Executive Assistant, Physical Medicine Rehabilitation, Veterans Administration, Washington, D. C.

GENERAL INFORMATION

Each paper read before this 3d Annual Scientific and Clinical Session shall be deposited with the secretary for publication in *The Physical & Mental Rehabilitation Journal*.

Convention Notes of Interest

Leo Berner, Convention Chairman, sends the following:

New York City begins acting as host on May 18, 19, 20, and 21, 1949, to the members, participants and guests who will attend the Third Annual National Convention of the Association for Physical and Mental Rehabilitation at the Hotel New Yorker. In conjunction with the convention, a four day course of scientific and clinical instruction in Corrective Therapy will be conducted.

From all parts of our country, Corrective Therapists, Rehabilitation personnel, Physical Education students, will arrive to attend and listen to discourses by prominent medical and educational authorities in the field of Physical Medicine Rehabilitation. Many of the lectures will be followed by questions, answer and discussion periods. For the first time, the collective knowledge of these eminent authorities will be compiled and recorded for the purpose of formulating a comprehensive, coordinated and unified approach to Corrective Therapy on a national basis.

The overwhelming eagerness to attend expressed by both partici-

pants and members is indicative of the realization of the great need for full discussion and more intensive activity in our field of Corrective Therapy.

A cordial invitation is extended to everyone in the field of Physical Medicine Rehabilitation and interested parties to attend.

VETERANS ADMINISTRATION
WASHINGTON 25, D. C.

March 8, 1949

Office of
Chief Medical Director
Department of
Medicine and Surgery
TO: Managers, All VA Hospitals,
Centers and Regional Offices
Dear Sir:

It has been brought to my attention that the National Convention of the Association for Physical and Mental Rehabilitation is to be held May 18-21, 1949, at the Hotel New Yorker, New York, New York. Attendance at this convention will enable individuals to keep abreast of advances in techniques and practices in their specialties and enhance their service to veterans. Outstanding medical specialists and other leaders in the field of Medical Rehabilitation are on

the program.

It is suggested that those employees in your installation who desire to attend, and who can be spared without lowering the standard of patient care, be permitted to attend. Official leave can be granted for this purpose to Department of Medicine and Surgery employees in accordance with Section I, Circular 244, 1946, and for employees subject to Federal Annual and Sick Leave Regulations under the provisions of Section I, Circular 11, 1947. It must be clearly understood by all employees that it will be necessary for them to defray all costs in connection with their attendance at the convention and that no expense to the Government is to be involved except the payment of salary.

Please inform all personnel at your station in this regard.

Very truly yours,
PAUL B. MAGNUSON,
Chief Medical Director.

There will be a meeting of the Board of Directors of the Association for Physical and Mental Rehabilitation at the Hotel New Yorker May 18 and 21, 1949.

THIRD ANNUAL CONVENTION ASSOCIATION FOR PHYSICAL AND MENTAL REHABILITATION SCIENTIFIC AND CLINICAL SESSIONS

PLEASE FILL OUT AND RETURN AS SOON AS POSSIBLE TO:

Arthur D. Tauber, Registrar,
1535 Walton Avenue,
Bronx 52, New York

Enclosed Registration Fee

Check or Money Order

Payable to: Association for Physical and Mental Rehabilitation.

Convention Dates—May 18, 19, 20 and 21, 1949.

Place—Hotel New Yorker, New York City, N. Y.

(Includes Official Luncheon) \$10.00

Signature

Place of Employment

Address

PAY YOUR 1949 DUES NOW

Next issue of the Journal will be sent only to those members who have paid their 1949 dues.

SEND TO:
BENJAMIN FORMAN
V. A. Hospital
Canandaigua, N. Y.

Application For Active Membership

ASSOCIATION FOR PHYSICAL AND MENTAL REHABILITATION

NAME _____ DATE _____

ADDRESS _____

POSITION TITLE _____

LOCATION _____

FORMAL EDUCATION _____

(College) (Degree) (Major Subjects)

(REQUIRED—A MAJOR IN PHYSICAL EDUCATION)

TRAINING IN PHYSICAL REHAB. _____

EXPERIENCE IN PHYSICAL AND/OR MENTAL REHABILITATION _____

(Required—One Year Under Direct Supervision of a Doctor of Medicine)

CONTRIBUTION _____

i.e. Publications, Studies, Surveys or Research in the field of Physical or Mental Rehabilitation

REFERENCES: 1. _____

Name Position Location

2. _____

Signature of Applicant

NOTE: REQUIREMENTS LISTED ABOVE ARE FOR ACTIVE MEMBERSHIPS
APPLICATION FOR ASSOCIATE MEMBERSHIP
ASSOCIATION FOR PHYSICAL AND MENTAL REHABILITATION

NAME _____

ADDRESS _____

POSITION TITLE _____

LOCATION _____

PROPOSED BY _____

This is your Convention
Make Your Reservations NOW.

THIRD
ANNUAL CONVENTION

Association for Physical & Mental Rehabilitation

May 18, 19, 20, 21, 1949

OFFICIAL HEADQUARTERS

HOTEL NEW YORKER

34th Street at 8th Avenue

New York 1, New York

